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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,375	12/29/2000	Futoshi Tanigawa	10059-365US (P23917-01)	1498
570	7590	04/06/2004	EXAMINER	
AKIN GUMP STRAUSS HAUER & FELD L.L.P. ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103-7013			CANTELMO, GREGG	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/752,375

Applicant(s)

TANIGAWA ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 26-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-34 is/are allowed.
- 6) ☒ Claim(s) 26-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 25, 2004 has been entered.

### ***Response to Amendment***

2. In response to the amendment received March 25, 2004:
- a. Claims 1-25 have been cancelled. New claims 26-34 are pending;
  - b. The prior art rejections of record stand as applied to new claims 26-34 presented herein.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '701 in view of JP '508 and Kato.

JP '701 discloses a positive electrode for an alkaline storage battery containing a first active material and a second active material: the first active material comprises X parts by weight of nickel hydroxide (X being 90-60 weight percent of the first and second active materials) with  $aX/100$  parts by weight of cobalt oxyhydroxide ( $aX/100$  being 1-10 weight percent of cobalt oxyhydroxide), and the second active material comprising Y parts by weight of particular nickel oxyhydroxide (Y being 10-40 weight percent of the first and second active materials) and  $bY/100$  parts by weight of cobalt oxyhydroxide ( $bY/100$  being 1-10 weight percent of cobalt hydroxide), the nickel in the second active material has an inherent oxidation number  $\alpha$  (claim 26).

One of the nickel hydroxide and nickel oxyhydroxide contains at least one element of cobalt, zinc, cadmium, magnesium, calcium, manganese and aluminum (translated prior art claim 6 as applied to claim 27).

The differences between the instant claims and prior art of JP '701 are that JP '701 does not explicitly disclose the oxidation number of the second active material to be from 2.6 to 2.92 and of the oxidation of the cobalt in the cobalt oxyhydroxide being greater than 3 (claim 26).

With respect to the nickel valence being between 2.6 and 2.92:

JP '508 discloses that nickel valence levels from 2.2-3.4 are known and cites a specific value of 2.8 (paragraph [0015], see attached JPO website translation).

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Selection of a nickel valence level between 2.2-3.4, encompasses the instant claimed range. Further the specific value of 2.8 is within the instant claimed range.

The motivation for selecting the nickel valence of JP '701 to be from 2.6 to 2.92 is that it optimizes the charge and discharge cycle of the electrochemical cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by selecting the nickel valence of JP '701 to be from 2.6 to 2.92 since it would have optimized the charge and discharge cycle of the electrochemical cell.

With respect to the cobalt valence being greater than 3:

Kato discloses a process wherein the nickel active material is coated with cobalt having an oxidation number greater than 3 (abstract).

The motivation for using a higher valence cobalt material is that it provides a positive electrode material having high active material utilization and improved overdischarge withstanding characteristics (col. 4, ll. 18-22).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a higher valence cobalt material since it would have provided a positive electrode material having high active material utilization and improved overdischarge withstanding characteristics.

### ***Response to Arguments***

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5. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The arguments presented in the Advisory Action, mailed February 17, 2004 are incorporated herein.

Applicant argues that the positive electrode of the instant claims and "negative electrode" of the prior art rejection are "completely different in potential range during the operation and electrochemical function".

As previously discussed with Applicant, the terms "positive" and "negative" as applied in the instant claims and prior art are not drawn to the opposite electrodes in a cell but are in fact the same electrode.

One of ordinary skill in the art would recognize that the material of the prior art of record and that of the instant claims are the same material and thus drawn to the same electrode in a given cell.

In addition the terms "positive" and "negative" are terms given to an electrode in relation to the charging or discharging cycle. The skilled artisan would recognize that while the prior art Japanese references use the term "negative" when referring to the electrode that this term is relative to the cycle (charging or discharging) of the cell. A positive electrode as used in Japanese references is the positive electrode in the charging mode, whereas the term positive electrode in U.S. references is to the positive electrode as defined in the discharge mode of the same cell.

The term negative electrode in a discharging state is the same as the positive electrode in a charging state. Since the prior art electrode materials are the same as

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the instant claim materials it is held that the use of positive as in the instant application (positive in the discharge state) is the same as the negative electrode (negative in the charge state). Thus the negative electrode of the prior art in a discharge mode will effectively be a positive electrode.

Thus it can be readily apparent to one of ordinary skill in the art that the terms positive and negative are not sufficient limitations in a rechargeable battery wherein each electrode cycles from positive to negative relative to whether the battery is discharging or charging.

Therefore Applicant has failed to provide convincing arguments as to the difference between the terms positive and negative in the prior art of record and instant claims and the rejection stands.

Applicant additionally argues that the instant claims are to nickel metal hydride batteries and not nickel cadmium batteries as taught by JP '508.

The electrochemical characteristics of both batteries are similar and the positive electrode materials of both nickel metal hydride batteries and nickel cadmium batteries are the same (as evidenced by Linden on page 33.1). Such knowledge would have been well within the skill of the ordinary worker in the art.

Since the positive electrode materials in both nickel metal hydride batteries and nickel cadmium batteries are the same as evidenced by Linden, one of ordinary skill in the art would have found it reasonable to combine positive electrode materials used in either NiMN or Ni-CAD cells.

With respect to the arguments to the cobalt valance:

Kato discloses a process wherein the nickel active material is coated with cobalt having an oxidation number greater than 3 (abstract).

The motivation for using a higher valence cobalt material is that it provides a positive electrode material having high active material utilization and improved overdischarge withstanding characteristics (col. 4, ll. 18-22).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a higher valence cobalt material since it would have provided a positive electrode material having high active material utilization and improved overdischarge withstanding characteristics. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

### ***Claim Rejections - 35 USC § 103***

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '701 in view of JP '508 and Kato as applied to claims 26 above, in further view of U.S. patent No. 4,837,119 (Ikoma).

The teachings of claims 26 have been discussed above and are incorporated herein.



The ratio of negative electrode capacity to positive electrode capacity is 2 to 1 (paragraph [0032] as applied to claim 28).

The differences not yet discussed are of the battery further comprising a negative electrode comprising a hydrogen storage alloy, a separator, an aqueous alkaline electrolyte solution, a sealing plate having a safety valve and a battery case.

While JP '702 does not detail the overall components of the battery, one of ordinary skill in the art would have found such modifications to have been readily apparent.

Ikoma discloses a sealed storage battery comprising a positive electrode 11, negative electrode 10, separator 12b, aqueous electrolyte solution, and a sealing plate having a safety valve (Fig. 5 and col. 6, line 48 through col. 7, line 8).

For JP '701 to measure the performance of the cells having the positive electrodes therein, the presence of an opposing negative electrode is required as well as an electrolytic solution to enable charge transfer in the battery.

Ikoma teaches of the use of a positive electrode, negative electrode and aqueous alkaline electrolyte solution in the aforementioned columns and lines.

Thus the motivation for providing a negative electrode and electrolyte solution is to effectively enable charge transfer from the positive electrode to a second electrode across the electrolytic medium.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a negative electrode and electrolyte solution since it would have effectively enabled

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change transfer from the positive electrode to a second electrode across the electrolytic medium.

In manufacturing a cell, the use of the separator is an obvious addition as shown by Ikoma to effectively separate the positive and negative electrodes in the aforementioned Fig. 5 and columns 6 and 7.

The motivation for using a separator as shown by Ikoma is to electrically isolate the positive and negative electrode materials.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by using a separator as shown by Ikoma since it would have electrically isolated the positive and negative electrode materials.

The use of a sealing plate seals the battery components from the external atmosphere in the aforementioned Fig. 5 and columns 6 and 7.

The motivation for providing a sealing plate to the open end of a battery is to seal the battery components within the battery and isolate them from the external environment.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a sealing plate to the open end of a battery since it would have sealed the battery components within the battery and isolated them from the external environment.

While providing a safety valve in the sealing plate which releases the gas generated in the battery out of the battery when inner pressure rises above a given

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value, in order that the battery is not damaged and does not explode in case of the abnormal increment of the inner pressure in the aforementioned Fig. 5 and columns 6 and 7 and also in col. 3, ll. 8-25.

The motivation for providing a safety valve in the sealing plate is to compensate for internal pressure fluxes so that the battery is not damaged and does not explode in case of the abnormal increment of the inner pressure.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '701 by providing a safety valve in the sealing plate since it would have compensated for internal pressure fluxes so that the battery would not be damaged and would not explode in case of the abnormal increment of the inner pressure.

#### ***Allowable Subject Matter***

7. Claims 29-34 are allowed.
8. The following is an examiner's statement of reasons for allowance: see items 10 and 11 of the previous office action, incorporated herein.

Claim 29 corresponds to the allowable subject matter of prior objected claim 16.

Claim 31 corresponds to the allowable subject matter of prior objected claim 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Page 33.1 to the Linden reference is provided as evidence showing that positive electrodes in both NiMH and NiCad batteries are the same.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo  
Primary Examiner  
Art Unit 1745

gc  
  
April 1, 2004